

# Assignment 2

## Positive Integers; Signed Numbers; Common Fractions

Textbook Assignment: Chapters 2 (17, 18), 3, 4 (28, 29)

- 2-1. The number 19 is a composite number.
- 2-2. A factor of a composite integer is never larger than the integer.
- 2-3. A prime number is any number that is divisible only by
1. 0
  2. 2
  3. itself and 1
  4. another prime number
- 2-4. The prime factorization of 40 is
1.  $2 \cdot 5 \cdot 8$
  2.  $2 \cdot 2 \cdot 10$
  3.  $5 \cdot 8 \cdot 40$
  4.  $2 \cdot 2 \cdot 2 \cdot 5$
- 2-5. An odd number can have no even factors.
- 2-6. All even numbers are divisible by 2.
- 2-7. Any number ending in 3 is divisible by 3.
- 2-8. In which of the following groups is each of the four numbers divisible by 4?
1. 704; 820; 710; 414
  2. 91,276; 902; 414; 612
  3. 8,924; 672; 14,000; 818
  4. 3,724; 716; 1,312; 81,728
- 2-9. The numbers 90 and 802 are both divisible by 5.
- 2-10. No odd number is divisible by 6.
- 2-11. In which of the following groups is each of the three numbers divisible by 8?
1. 240; 896; 830
  2. 217,120; 112,112; 4,098
  3. 637,168; 78,126; 111,736
  4. 215,240; 817,896; 425,800
- 2-12. Which of the following numbers is divisible by both 3 and 8?
1. 16,807
  2. 33,120
  3. 49,928
  4. 62,412
- 2-13. If any number is multiplied by 9, the sum of the digits of the product is divisible by 9.
- 2-14. A number without a sign is considered to be either negative or positive depending on the problem.
- 2-15. The minus sign (-) may indicate either the operation of subtraction or that a number is negative.
- 2-16. A minus sign placed in front of a reading taken from a mercurial thermometer indicates that the
1. actual temperature is less than the reading
  2. present reading is less than the previous reading
  3. mercury has fallen below the scale of the thermometer
  4. temperature is a number of units below a zero reference point
- 2-17. If the reading on a thermometer is  $+1^{\circ}$  centigrade and the temperature falls  $2^{\circ}$  centigrade, the new reading will be
1.  $+1^{\circ}$  centigrade
  2.  $0^{\circ}$  centigrade
  3.  $-1^{\circ}$  centigrade
  4.  $-2^{\circ}$  centigrade

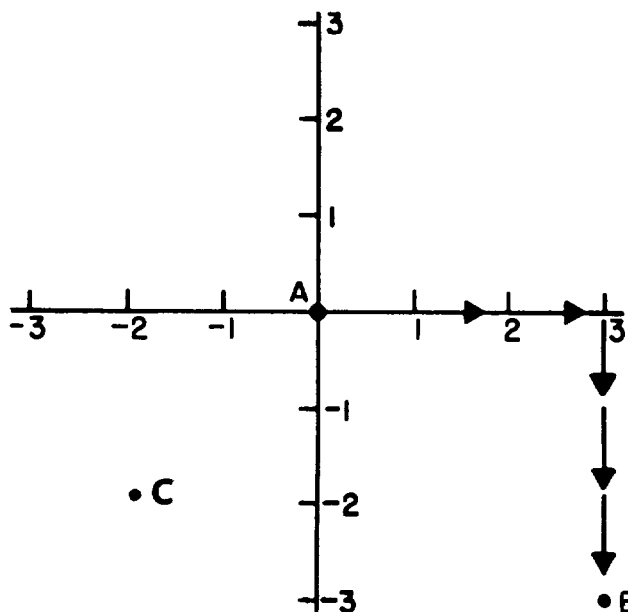


Figure 2A.--Rectangular coordinate system.

● In answering items 2-18 and 2-19 refer to figure 2A.

- 2-18. To get from point A to point B, as indicated by the arrows on the rectangular coordinate system, a person must go in a
1. negative direction and then in a positive direction
  2. negative direction and then in a negative direction
  3. positive direction and then in a negative direction
  4. positive direction and then in a positive direction

2-19. The signs associated with point C with regard to the horizontal and vertical directions, respectively, are

1. +, -
2. +, +
3. -, -
4. -, +

2-20. The "greater than" symbol ( $>$ ) and the "less than" symbol ( $<$ ) always point toward the smaller number.

2-21. Which of the following groups of mathematical statements is true?

1. If  $A > 0$  and  $B < 0$ , then  $A < B$
2. If  $A > 0$  and  $B > 0$ , then  $A < B$
3. If  $A < 0$  and  $B > 0$ , then  $B > A$
4. If  $A > 0$  and  $B > 0$ , then  $B > A$

● In answering items 2-22 and 2-23, refer to figure 2B.

2-22. What is the absolute value of a number?

1. The number times itself
2. 1 divided by the number
3. The value of the number without regard to sign
4. The value of a number with the fractional or decimal part disregarded

2-23. What is the distance between point A and point B?

1. -1
2. 1
3. 3
4. 7

2-24. The absolute value of 5 is greater than the absolute value of -7.

2-25. What is the general rule for adding two or more negative numbers?

1. Find the sum of the numbers, disregarding the sign.
2. Find the product of the absolute values of the numbers, taking the sign of the largest.
3. Find the sum of the absolute values of the numbers and place a minus sign before the result.
4. Find the difference between the absolute values of the numbers and place a minus sign before the result.

2-26. What is the general rule for adding a positive and a negative number?

1. Find the difference between the reciprocal values of the numbers and place a plus sign before the result.
2. Find the difference between the absolute values of the numbers and prefix the sign of the number having the larger absolute value.
3. Find the sum of the absolute values of the numbers and place a plus sign before the result.
4. Find the sum of the absolute values of the numbers and prefix the sign of the number having the larger absolute value.

2-27. What result do you obtain when you add -6 and -7?

1. +13
2. +1
3. -1
4. -13

2-28. What result do you obtain when you take the sum of -26 and +8?

1. +34
2. +18
3. -18
4. -34

2-29. What is the result of subtracting +3 from -10?

1. +13
2. +7
3. -7
4. -13

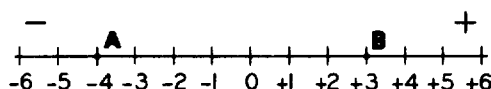


Figure 2B.--Signed numbers line.

- 2-30. In solving a subtraction problem involving signed numbers, what is the correct procedure to use in terms of the number line?
1. Find the subtrahend on the number line then move the number of units of the minuend in the direction opposite in sign of the minuend.
  2. Find the subtrahend on the number line then move the number of units of the minuend in the direction of the sign of the minuend.
  3. Find the minuend on the number line then move the number of units of the subtrahend in the direction opposite in sign of the subtrahend.
  4. Find the minuend on the number line then move the number of units of the subtrahend in the direction of the sign of the subtrahend.
- 2-31. What is the result of subtracting +14 from +6?
1. +20
  2. +8
  3. -8
  4. -20
- 2-32. What is the result of the operation indicated by the expression  $(-3) - (-4)$ ?
1. +7
  2. +1
  3. -1
  4. -7
- 2-33. What is the result of the operation indicated by the expression  $(+9) - (-5)$ ?
1. +14
  2. +4
  3. -4
  4. -14
- 2-34. What is the result of the operation indicated by the expression  $(-6) + (-4)$ ?
1. -10
  2. -2
  3. +2
  4. +10
- 2-35. What is the product of -5 and 4?
1. +20
  2. +9
  3. -1
  4. -20
- 2-36. What is the product of 5 and -4?
1. +20
  2. +9
  3. -1
  4. -20
- 2-37. What is the product of -5 and -4?
1. +20
  2. +9
  3. -1
  4. -20
- 2-38. To multiply +6 by +3 means to
1. add +3 to +6
  2. add +6 to +3
  3. add  $(+3) + (+3) + (+3)$
  4. add  $(+6) + (+6) + (+6)$
- 2-39. What is the general rule for determining the sign of the product of two numbers that are opposite in sign?
1. The sign is negative when the larger number is positive and positive when the larger number is negative.
  2. The sign is positive when the larger number is positive and negative when the larger number is negative.
  3. The sign is always negative.
  4. The sign is always positive.
- 2-40. What is the rule for the sign of the product of two negative numbers?
1. The sign is negative unless both numbers have equal value.
  2. The sign is negative in all cases except those in which one of the numbers is less than one.
  3. The sign is always negative.
  4. The sign is always positive.
- 2-41. Which of the following products is always negative?
1. The product of more than two numbers
  2. The product of an even number of negative numbers
  3. The product of an odd number of negative numbers
  4. The product of more than two negative numbers
- 2-42. Why is the product of -3 and -4 a positive 12?
1. Adding -4 three times produces movement in the negative direction.
  2. Adding -4 three times produces movement in the positive direction.
  3. Taking away -4 three times produces movement in the positive direction.
  4. Taking away -4 three times produces movement in the negative direction.
- 2-43. What is the product of -2, -4, +8, and -1.5?
1. +0.5
  2. -15.5
  3. +96
  4. -96
- 2-44. Which of the following statements concerning the relation of the process of division to other processes in mathematics is correct?
1. Division is a short way of adding.
  2. Division is the basis of subtraction.
  3. Division is the opposite or inverse of subtraction.
  4. Division is the opposite or inverse of multiplication.

- 2-45. What is the general rule for determining the sign of the result when dividing a number by another number opposite in sign?
1. The sign of the result is always positive.
  2. The sign of the result is always negative.
  3. The sign of the result is positive only when the sign of the larger number is negative.
  4. The sign of the result is positive only when the sign of the smaller number is negative.
- 2-46. What is the quotient of 18 divided by -3?
1. +15
  2. +6
  3. -6
  4. -21
- 2-47. What is the quotient of -18 divided by -3?
1. +15
  2. +6
  3. -6
  4. -21
- 2-48. What is the result of performing the division indicated by  $\frac{15}{-3}$ ?
1. +12
  2. +5
  3. -5
  4. -45
- 2-49. What is the quotient of -12 divided by +3?
1. -36
  2. -9
  3. -4
  4. +4
- 2-50. What is the result of  $\frac{(6)(-4)}{8}$ ?
1. -4
  2. -3
  3. +3
  4. +4
- 2-51. The expressions  $8 - (6 + 2 - 4)$  and  $8 - 6 + 2 - 4$  have the same value.
- 2-52. Which statement is true about the fraction  $-\frac{3}{5}$ ?
1. The sign of the 3 is negative; the 5 has no sign.
  2. The sign of the 5 is negative; the 3 has no sign.
  3. The sign of the 3 is negative; the sign of the 5 is negative; the sign of the fraction is negative.
  4. The sign of the 3 is positive; the sign of the 5 is positive; the sign of the fraction is negative.
- 2-53. The simplest form of  $-\frac{-6}{-7}$  is
1.  $-\frac{6}{7}$
  2.  $\frac{-6}{+7}$
  3.  $\frac{-6}{-7}$
  4.  $\frac{+6}{-7}$
- 2-54. The fraction  $\frac{8}{-12}$  is equivalent to
1.  $\frac{-3}{4}$
  2.  $\frac{-2}{3}$
  3.  $\frac{+2}{3}$
  4.  $\frac{+3}{2}$
- 2-55. A statement which requires proof to verify its truth is considered an axiom.
- 2-56. Which of the following illustrates an axiom of equality?
1.  $7 = 4 + 3$ .
  2. If  $a > b$ , then  $b < a$ .
  3. If  $a = b$ , then  $a + 4 = b + 4$ .
  4. If  $a = 2b$  and  $b = 2$ , then  $a = 4$ .
- 2-57. Incorrect usage of the multiplication axiom is illustrated by
1.  $2(4) = 2(3+1)$
  2.  $3(5+6) = 3(1+2+8)$
  3.  $7(6) = 7(2+5)$
  4. both 2 and 3 above
- 2-58. Is it true or false that an axiom is used in the following development? Assume  $4y = 28$ . Divide both sides of this equation by 4 (that is,  $\frac{4y}{4} = \frac{28}{4}$ ). Therefore,  $y = 7$ .
- 2-59. The sum of the numbers 4, 3, and 2 may be found by adding 4 and 3 and then adding 2 or by adding 4 to the sum of 3 and 2. These two procedures produce equivalent results as stated by the
1. associative law of multiplication
  2. commutative law of multiplication
  3. distributive law
  4. associative law of addition
- 2-60. Which of the following expressions is equivalent to  $7 - (8 - 4)$ ?
1.  $(7 - 8) - 4$
  2.  $7 - 8 - 4$
  3.  $7 + [(-8) + (-4)]$
  4.  $7 + [(-8) + 4]$

- 2-61. A column of figures may be added from either the top to the bottom or from the bottom to the top. This fact results from the
1. distributive law
  2. commutative law of addition
  3. associative law of addition
  4. associative law of multiplication
- 2-62. The commutative law of multiplication means that the product of two or more numbers is the same regardless of the order of multiplication.
- 2-63. All of the following expressions are equivalent to  $2(3 + 4 + 5)$  except
1.  $2 \cdot 3 + 2 \cdot 4 + 2 \cdot 5$
  2.  $(4 + 3 + 5)2$
  3.  $2(12)$
  4.  $2(5 + 4) + 3$
- 2-64. Common fractions and integers constitute a subset of the real numbers called the rational numbers.
- 2-65. The denominator of a fraction tells how many and the numerator tells what kind.
- 2-66. If 5 seconds is expressed as a fraction of an hour, what number will be in the denominator of the fraction?
1. 25
  2. 3,600
  3. 50,400
  4. 126,420
- 2-67. If 120 feet is expressed as a fraction of a mile, what number will appear in the numerator of the fraction?
1. 120
  2. 5,280
  3.  $\frac{5,280}{120}$
  4.  $(120 \times 5,280)$
- 2-68. The rational number 7 can be written as the ratio of two integers.
- 2-69. Which of the following is a proper fraction?
1.  $\frac{52}{3}$
  2.  $\frac{9}{4}$
  3.  $\frac{6}{3}$
  4.  $\frac{19}{21}$
- 2-70. Which of the following is an improper fraction?
1.  $1\frac{3}{4}$
  2.  $\frac{3}{5}$
  3.  $\frac{4}{8}$
  4.  $\frac{8}{7}$
- 2-71. Which of the following fractions would not normally be written as a mixed number?
1.  $\frac{4}{3}$
  2.  $\frac{5}{2}$
  3.  $\frac{9}{3}$
  4.  $\frac{11}{2}$
- 2-72. Which of the following mixed numbers has the largest numerator when it is written as an improper fraction?
1.  $1\frac{1}{32}$
  2.  $\frac{53}{8}$
  3.  $11\frac{1}{4}$
  4.  $14\frac{2}{3}$
- 2-73. If an angle of  $360^\circ$  is divided into  $30^\circ$  sectors, what fraction of the  $360^\circ$  angle is represented by 1 sector?
1.  $\frac{1}{24}$
  2.  $\frac{1}{12}$
  3.  $\frac{1}{6}$
  4.  $\frac{1}{3}$
- 2-74. If a stick one yard long is divided into 72 equal parts, what is the length of each part?
1.  $\frac{1}{72}$  inch
  2.  $\frac{1}{24}$  inch
  3.  $\frac{1}{2}$  inch
  4. 2 inches
- 2-75. The probability of rolling a 3 on a 6-faced die is  $\frac{1}{6}$ . This relationship can also be expressed as
1. 1 part in 6
  2. the ratio of 1 to 6
  3. 1 time out of 6
  4. each of the above